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REFLECTION SEISMIC COVERAGE OF ONSHORE AND OFFSHORE NEW BRUNSWICK, 1948–1999

C. St. Peter and R. Phillips

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REFLECTION SEISMIC COVERAGE OF ONSHORE AND OFFSHORE NEW BRUNSWICK, 1948-1999

ABSTRACT

Onshore and offshore reflection seismic surveys completed in New Brunswick between 1948 and 1999 have been summarized and plotted on 1:250, 000 scale maps. The report focuses on deep bedrock profiles which have yielded useful stratigraphic and structural information. The data compilations include the geographic location of all surveys, details on format, and availability of the data.

RÉSUMÉ

Les études de réflexion sismique côtières et extracôtières effectuées au Nouveau-Brunswick entre 1948 et 1999 ont été résumées et reportées sur des cartes à l'échelle 1/250 000. Le rapport porte principalement sur les profils du substratum rocheux profond qui ont fourni d'intéressantes données stratigraphiques et structurelles. Cette compilation fournit l'emplacement géographique de toutes les études ainsi que le détail des formats et de la disponibilité des données.

INTRODUCTION

Each survey is a separate record and has been assigned a Survey Index Number based on the chronological order of completion of the survey. The records are available as a Microsoft ACCESS database from the Department of Natural Resources and Energy, Minerals and Energy Division. The lines 'shot' for each survey have either a line number or a 'line series' designation applied. The locations of the lines along with their number or series designation are plotted on six 1:250 000 scale maps (Plates 2000–20A to 2000–20F). An index map showing the locations of the 1:250 000 scale maps is shown on Figure 1. Chevron Standad Limited and Chevron Canada Resources Limited carried out four surveys in the Moncton Subbasin in the 1980's (see Survey Index Numbers 17, 21, 22 and 23). During those surveys, in a few cases, the same line numbers were applied to geographically separate lines. To distinguish those duplicate line numbers, the second line is coded with an additional 'L'; for example, to distinguish the two lines with number 59, they are coded L59 and LL59 (see Plates 2000–20C and 2000–20D).

All known surveys within the New Brunswick portion of the Bay of Fundy are included and, for the sake of completeness, survey lines on the Nova Scotia side of the Bay are also depicted (Plates 2000–20A, 2000–20B and 2000–20C). All surveys completed in the Northumberland Strait north of Cape Tormentine are listed as are those in the Gulf of St. Lawrence east to 64° longitude. No surveys are known to exist in the Bay of Chaleur south of 48° latitude. A number of shallow penetration surveys have been completed in the nearshore (<50 m water depth) for purposes of bottom-sediment profiling and bedrock surface delineation. They are listed in Appendix 1. Earth and Oceans Research Ltd. (1988) described the shallow penetration surveys in detail.

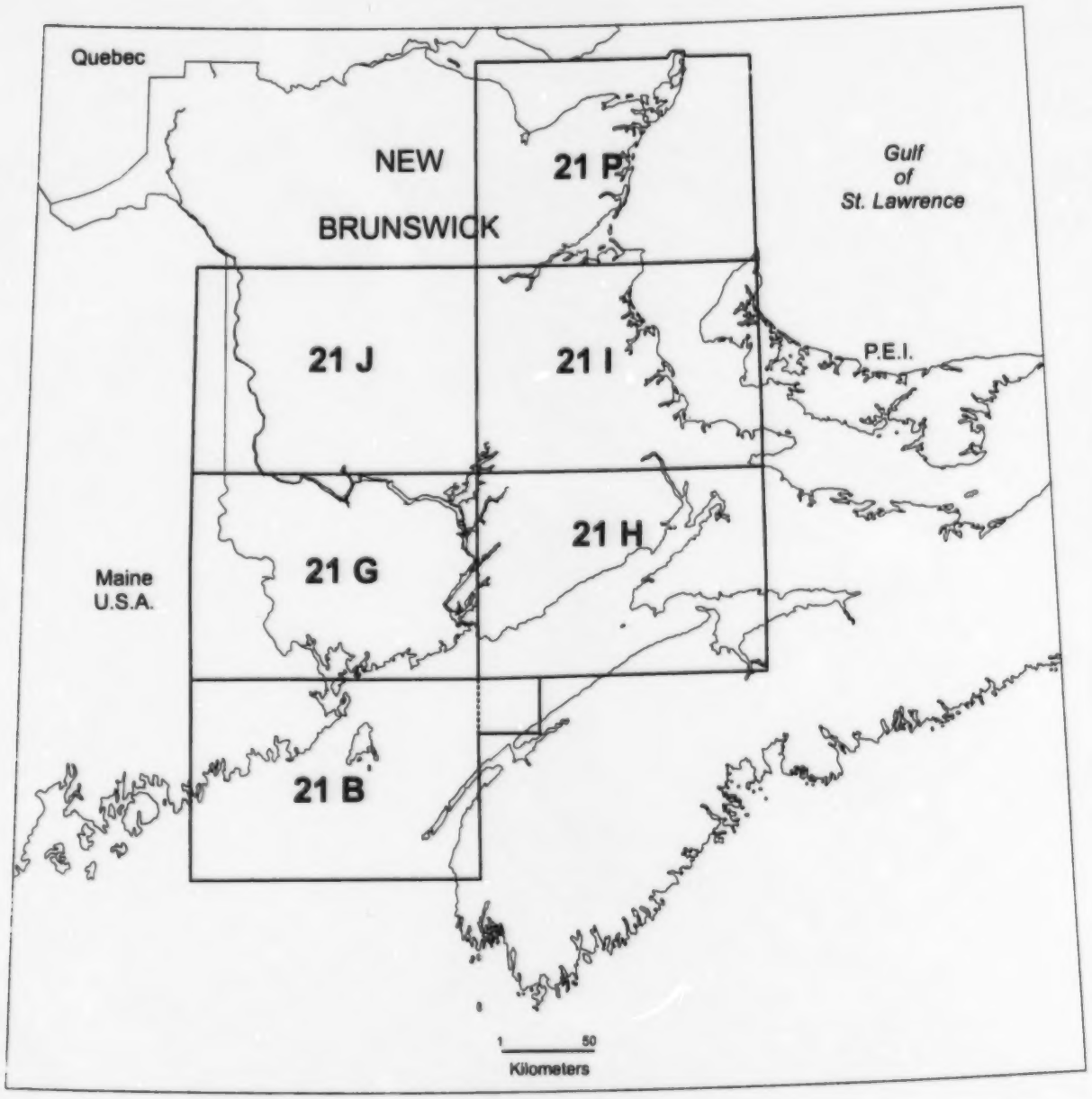

Figure 1. Index map to1:250 000 scale seismic maps (Plates 2000-20A to 2000-20F).

Reports and files held by the New Brunswick Department of Natural Resources and Energy were utilized to prepare the compilation. In addition, the Department has produced a number of detailed shotpoint and line location maps (Martel 1986a and 1986b). Similar compilations have been undertaken by the Nova Scotia Department of Mines and Energy (McMahon 1988); the Atlantic Geoscience Centre of Energy, Mines and Resources Canada (Durling, personal communication, 1989); and the Canada Oil and Gas Lands Administration (Bigelow 1988). Several of the companies that commissioned the surveys were contacted and supplied specific information.

This report is not intended to be the final source of information for all users. Those requiring hard data must acquire it directly from the appropriate repository listed in the survey record summaries. All of the surveys completed by private sector corporations, except the surveys by Corridor Resources Inc. (Survey Index Numbers 24, 25, and 26) are public information since their periods of confidentiality have expired. However, this does not mean that all the data are either held by or are available from the appropriate repository.

This report, along with the accompanying seismic line location maps (Plates 2000-20A to 2000-20F) can be accessed via the Internet at the Province of New Brunswick, Department of Natural Resources and Energy website.

ACKNOWLEDGEMENTS

The authors wish to acknowledge that this report is in large part based on the data compiled in a Geoscience Report prepared by Three-D GeoConsultants Limited for the New Brunswick Department of Natural Resources and Energy (Three-D GeoConsultants Limited, 1990). The changes from the original Three-D GeoConsultants Limited report are mainly with respect to the formatting and updating of the survey records and the plotting of seismic lines on 1:250 000 scale maps. We also wish to thank Barb Carroll for editing the text under a very compressed time schedule. The maps were digitally prepared by Ken Mersereau and Diane Richard. Paul Rennick converted the digital version of the report to '.pdf format' for emplacement on the website of the Province of New Brunswick, Department of Natural Resources and Energy.

SEISMIC SURVEYS

SURVEY INDEX NO.	1	***COMPANY***	Shell Oil Ltd.
CONTRACTOR	Unknown	***DATE OF SURVEY***	1948 and 1949
PURPOSE	Petroleum exploration	***COVERAGE***	A - 56 km, B - 160 km
NTS MAP(S)	21 H, 21 I	***AREA***	New Brunswick Platform and Moncton Subbasin

LINE NUMBERS OR LINE SERIES Lines numbers are unknown, but line locations and geological interpretations of profiles are shown on figures 8, 9, 10 and 11 in Gussow (1953).

TYPE OF STUDY A - Refraction, B - Reflection

DATA CHARACTERISTICS Unknown

DATA AVAILABILITY Unavailable

REFERENCE(S) Gussow, W. C. (1953). Carboniferous stratigraphy and structural geology of New Brunswick, Canada. Bulletin of the American Association of Petroleum Geologists, V 37, No. 7, pp 1713-1816

NOTES A discussion of the surveys and geologic cross sections based in part on the seismic survey are presented by Gussow (1953).

SURVEY INDEX NO.	**2**	***COMPANY***	Imperial Oil Limited
CONTRACTOR	Seismograph Service Corporation of Canada	***DATE OF SURVEY***	February - July, 1958
PURPOSE	Petroleum exploration	***COVERAGE***	128 km
NTS MAP(S)	21 H, 21 I	***AREA***	Moncton Subbasin east of Petitcodiac and northern portions of the Cumberland Subbasin in New Brunswick

LINE NUMBERS OR LINE SERIES Lines: I1A, I1B, I2A, I2B, I2C, I3A, I3B, I4A, I4B, I4C, I4D, I4E, I5A, I5B, I6A, I6B, I6C, I7A, I7B, I7C, I7D and I7E. See note 2 below.

TYPE OF STUDY Reflection: Charges, 11 to 36 kg of dynamite per charge; 316 shotholes; 716 profiles

DATA CHARACTERISTICS Details of data acquisition are unknown

DATA AVAILABILITY Copies of the profiles are available from the New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division.

REFERENCE(S)

Bunker, J.G. (1958). Letters entitled "Report on seismograph survey, Sackville, Port Elgin, Hillsborough-Petitcodiac areas, New Brunswick" to W.A. Roliff, Imperial Oil Ltd. dated July 10, 15 and 20. New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division. Harlow, R.D. (1958). Letter entitled "Report on Sackville, New Brunswick prospect" to W.A. Roliff, Imperial Oil Ltd. dated June 14. New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division.

NOTES

1. Western Decalta Petroleum Ltd. attempted, unsuccessfully, in 1973 to reprocess the Imperial data.
2. Only line I2C is plotted on Plate 2000-20C. All the other Imperial lines were 'shot' along roads which have subsequently been resurveyed by Chevron Standard Limited or Chevron Canada Resources Limited (see Survey Index Nos. 17, 21, 22 and 23). The locations of the Imperial lines are shown on New Brunswick Department of Natural Resources and Energy, Plate 84-236 (St. Peter, 1984).

SURVEY INDEX NO.	3	***COMPANY***	Hundson's Bay Oil and Gas Company Limited
CONTRACTOR	Uncertain, Delta Exploration Co. Inc. is a possibility	***DATE OF SURVEY***	1967
PURPOSE	Assumed to be petroleum exploration	***COVERAGE***	3077 km
NTS MAP(S)	21 I, 21 P	***AREA***	Northumberland Strait and Gulf of St. Lawrence

LINE NUMBERS OR LINE SERIES H Series

TYPE OF STUDY Marine reflection: vibrator source

DATA CHARACTERISTICS Hard copy on plastic and microfilm; reported as poor - fair quality

DATA AVAILABILITY Profiles for lines 1-22 and 30-35 are available from the Atlantic Geoscience Centre and Canada Oil and Gas Lands Administration, Ottawa; lines 1-22 are most relevant to New Brunswick; COGLA Project # 8620-H7-2E

REFERENCE(S)

Bigelow, S. (1988). Frontier lands: released information. Canada Oil and Gas Lands Administration, Halifax, N.S. Marillier, F. and Durling, P. (1989). Personal communication. Atlantic Geoscience Centre, Dartmouth, N.S.
McMahon, P.G. (1988). Reflection seismic coverage of onshore and nearshore Nova Scotia, 1942-1987. Nova Scotia Department of Mines and Energy, Information Series No. 14, 34 p.

NOTES HDOG marine seismic completed in 1967 in Northumberland Strait approaches Tormentine (Map Index No. 8: McMahon, 1988)

SURVEY INDEX NO.	**4**	***COMPANY***	Delta Exploration Co. Inc.
CONTRACTOR	Unknown	***DATE OF SURVEY***	1967
PURPOSE	Assumed to be petroleum exploration	***COVERAGE***	2 lines, 1023 km in total
NTS MAP(S)	21 P	***AREA***	Gulf of St. Lawrence: Magdalen and Anticosti Basins

LINE NUMBERS OR LINE SERIES D Series

TYPE OF STUDY Marine reflection

DATA CHARACTERISTICS Unknown; COGLA Project # 8624-04-1P

DATA AVAILABILITY Unavailable

REFERENCE(S)

Bigelow, S. (1988). Frontier lands: released information. Canada Oil and Gas Lands Administration, Halifax, N.S.
Marillier, F. and Durling, P. (1989). Personal communication. Atlantic Geoscience Centre, Dartmouth, N.S.

NOTES

SURVEY INDEX NO.	**5**	***COMPANY***	Amoco
CONTRACTOR	Unknown	***DATE OF SURVEY***	1968
PURPOSE	Assumed to be petroleum exploration	***COVERAGE***	Portions of 2 lines plot on map sheet 21 P; total survey consisted of 27 lines, 1023 km
NTS MAP(S)	21 P	***AREA***	East and west of Magdalen Islands

LINE NUMBERS OR LINE SERIES A Series

TYPE OF STUDY Marine reflection

DATA CHARACTERISTICS Good quality; format is unknown, COGLA Project # 8624-A4-4E

DATA AVAILABILITY Confidential. Amoco will not release any of the data.

REFERENCE(S)

Bigelow, S. (1988). Frontier lands: released information. Canada Oil and Gas Lands Administration, Halifax, N.S.
Marillier, F. and Durling, P. (1989). Personal communication. Atlantic Geoscience Centre, Dartmouth, N.S.

NOTES

SURVEY INDEX NO.	**6**	***COMPANY***	Mobil Oil Canada Ltd
CONTRACTOR	Mobil Geophysical Services Centre	***DATE OF SURVEY***	September 4 - 24, 1968
PURPOSE	Petroleum exploration	***COVERAGE***	613.8 km; 6.5 second depth
NTS MAP(S)	21 B, 21 G, 21 H	***AREA***	Bay of Fundy

LINE NUMBERS OR LINE SERIES B-200 Series

TYPE OF STUDY 12-fold marine reflection: diesel gun source, 12 second cycle (10-50 cps); 2377m, 24 trace streamer cable

DATA CHARACTERISTICS Recording equipment - T.I. Seismic Digital Filed System 283 Reocrder; processing was completed inhouse by Mobil in Dallas, Tx. and consisted of static and normal moveout corrections, time variant filtering, deconvolution and stacking; data quality reported by Mobil as poor and intepretation speculative

DATA AVAILABILITY Mobil Oil Canada will not supply information or data additional to references listed below; sections are available from the Nova Scotia Department of Mines and Energy

REFERENCE(S) McMahon , P.G. (1988). Reflection seismic coverage of onshore and nearshore Nova Scotia, 1942-1987. Nova Scotia Department of Mines and Energy, Information Series No. 14, 34 p. Mobil Oil Canada Ltd. (1968). Geophysical report, 1968 operational season. Report filed with New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, 7 p. Geophysical Report, 1968

NOTES Gravity and magnetic surveys conducted concurrently

SURVEY INDEX NO.	7	***COMPANY***	Mobil Oil Canada Ltd
CONTRACTOR	Mobil Geophysical Services Centre	***DATE OF SURVEY***	September 8 - 25, 1969
PURPOSE	Petroleum exploration	***COVERAGE***	1437.6 km
NTS MAP(S)	21 B, 21 G, 21 H	***AREA***	Bay of Fundy

LINE NUMBERS OR LINE SERIES C-200 Series

TYPE OF STUDY 12-fold marine reflection: diesel gun source, 12 second cycle (10-50 cps); 2377m, 24 trace streamer cable

DATA CHARACTERISTICS Recording equipment - T.I. Seismic Digital Field System 283 Recorder tape processing was completed inhouse by Mobil in Dallas, Tx. and consisted of static and normal moveout corrections, time variant filtering, deconvolution and stacking; data quality reported as good

DATA AVAILABILITY Mobil Oil Canada will not supply information or data additional to references listed below; sections are available from the Nova Scotia Department of Mines and Energy

REFERENCE(S) McMahon, P.G. (1988). Reflection seismic coverage of onshore and nearshore Nova Scotia, 1942-1987. Nova Scotia Department of Mines and Energy, Information Series No. 14, 34 p.
Mobil Oil Canada Ltd. (1969). Geophysical report, 1969 operational season. Report filed with New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, 4 p.

NOTES Sonobuoy refraction, gravity and magnetic surveys conducted concurrently

SURVEY INDEX NO.	8	***COMPANY***	Mobil Oil Canada Ltd.
CONTRACTOR	Geophysical Associates International	***DATE OF SURVEY***	March 25 - April 3, 1972
PURPOSE	Petroleum exploration	***COVERAGE***	492 km; 5 second depth.
NTS MAP(S)	21 B, 21 G, 21 H	***AREA***	West end of Bay of Fundy

LINE NUMBERS OR LINE SERIES F-400 Series

TYPE OF STUDY 24-fold marine reflection: air gun source; 2700m, 24 trace streamer cable

DATA CHARACTERISTICS Recording equipment - T.I. Digital Field System III; processing was completed inhouse by Mobil in Dallas, Tx. utilizing techniques outlined by Giesbrecht (1972); data quality reported as poor to fair by Mobil.

DATA AVAILABILITY Field and final stacked tapes retained by Mobil, Dallas; Mobil Oil Canada will not supply information or data additional to references listed below; sections are available from the Nova Scotia Department of Mines and Energy

REFERENCE(S)

McMahon, P.G. (1988). Reflection seismic coverage of onshore and nearshore Nova Scotia, 1942-1987. Nova Scotia Department of Mines and Energy, Information Series No. 14, 34 p.
Giesbrecht, A.H., (1972). Mobil Oil Canada geophysical operational report, 1972, Bay of Fundy. Report filed with New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, 4 p.

NOTES

SURVEY INDEX NO. 9

COMPANY Mobil Oil Canada Ltd

CONTRACTOR Geophysical Associates International

DATE OF SURVEY November 27 - 28, 1973

PURPOSE Petroleum exploration

COVERAGE 167 km; 5 second depth.

NTS MAP(S) 21 H

AREA West end of Bay of Fundy; reshoot of specific lines shot in 1972

LINE NUMBERS OR LINE SERIES G-400 Series

TYPE OF STUDY 48-fold marine reflection: air gun source; 2350m, 48 trace streamer cable

DATA CHARACTERISTICS Recording equipment - T.I. Digital Field System IV recorder; processing completed in-house by Mobil, Calgary, AB utilizing techniques outlined by Gresbrecht (1974); data quality reported as poor.

DATA AVAILABILITY Mobil Oil Canada will not supply information or data additional to references listed below; sections are avalaibe from the Nova Scotia Department of Mines and Energy.

REFERENCE(S)

Giesbrecht, A.H. (1974). Mobil Oil Canada geophysical operational report, Bay of Fundy, Province of New Brunswick Licences 68-3, -4, -7, -8, -11, -12. Report filed with New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, 9 p.

McMahon, P.G. (1988). Reflection seismic coverage of onshore and nearshore Nova Scotia, 1942-1987. Nova Scotia Department of Mines and Energy, Information Series No. 14, 34 p.

Prevey, J.L. (1974). Mobil Oil Canada geophysical interpretation report, Bay of Fundy, Province of New Brunswick Licences 68-1 thru 13. Report filed with New Brunswick Deprtment of Natural Resources and Energy, Minerals and Energy Division, 5 p.

NOTES

SURVEY INDEX NO.	**10**	***COMPANY***	Canadian Occidental Petroleum Ltd
CONTRACTOR	Dresser Olympic Canada	***DATE OF SURVEY***	July, 1974
PURPOSE	Oil shale exploration	***COVERAGE***	48 km, 3,000 - 4,600m depth
NTS MAP(S)	21 H and/or 21 J (not plotted, see NOTES)	***AREA***	Petitcodiac, Moncton Subbasin

LINE NUMBERS OR LINE SERIES Exact line locations are not known

TYPE OF STUDY Reflection: 0.6 kg dynamite/charge

DATA CHARACTERISTICS Recording equipment - T.I. Digital Field System IV recorder sections; migrated at 4,267m/sec

DATA AVAILABILITY Interpreted hard copy sections available from New Brunswick Department of Natral Resources and Energy, Minerals and Energy Division.

REFERENCE(S) Gordon, D.C. (1975). Petitcodiac seismic exploration. Canadian Occidental report filed with New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, 7 p.

NOTES The exact line locations are unknown

SURVEY INDEX NO. 11

COMPANY Kerr-McGee Corp.

CONTRACTOR Dresser Olympic Canada

DATE OF SURVEY June - September, 1974

PURPOSE Petroleum exploration

COVERAGE 112 km

NTS MAP(S) 21 H, 21 I

AREA Moncton Subbasin

LINE NUMBERS OR LINE SERIES K Series

TYPE OF STUDY Common depth point reflection: dynamite source; 48 traces

DATA CHARACTERISTICS Recording equipment - T.I. Digital Field System IV recorder; processing via Seiscan Delta/G.S.I.

DATA AVAILABILITY Digital field tapes and field reports available through Kary Data Consultants Ltd., Calgary, AB.

REFERENCE(S) Kary, M.D. (1989). Kerr-McGee seismic data, written response to inquiries. Kary Data Consultants Ltd (403-262-7021), Calgary, AB.

NOTES

SURVEY INDEX NO.	**12**	***COMPANY***	Societe Quebecois d'Initiatives Petrolieres
CONTRACTOR	Geophysical Services Incorporated	***DATE OF SURVEY***	November 12 - 26, 1974
PURPOSE	Petroleum exploration	***COVERAGE***	911 km total (Durling, 1989 refers to 829 km)
NTS MAP(S)	21 I, 21 P	***AREA***	Northumberland Strait

LINE NUMBERS OR LINE SERIES Q Series

TYPE OF STUDY 24 and 12 fold marine reflection: air gun source

DATA CHARACTERISTICS Hard copy sections; quality reported as fair to good (Anger, 1976)

DATA AVAILABILITY
- 4 sections included in Anger (1976);
- plastic copies of sections 1-19 held by Atlantic Geoscience Centre
- microfilm of sections 1-19 held by COGLA (project # 8620-S14-5E)

REFERENCE(S)
Anger, C. (1976). Geophysical report on Prince Edward Island (Northumberland Strait) for SOQUIP; Geophysical Services Incorporated and Compagnie Generale de Geophysical, Report No. 7211. Filed with Nova Scotia Department of Mines and Energy, Petroleum Resources Section. Durling, P. (1989). Personnel communication. Atlantic Geoscience Centre, Dartmouth, N.S.
McMahon, P.G. (1988). Reflection seismic coverage of onshore and nearshore Nova Scotia, 1942-1987. Nova Scotia Department of Mines and Energy, Information Series No. 14, 34 p.

NOTES

SURVEY INDEX NO.	**13**	***COMPANY***	New Brunswick Department of Natural Resources and Energy
CONTRACTOR	Geoterrex Ltd. and Geodigit Ltd	***DATE OF SURVEY***	June - November, 1978
PURPOSE	To determine structure, macrostratigraphy and basement configuration of New Brunswick Platform - to survey known and suspected evaporite structures in Moncton and Cumberland Subbasins	***COVERAGE***	178 km, 1500-2000m max. depth
NTS MAP(S)	21 G, 21 H, 21 I, 21 J, 21 P	***AREA***	Sackville, Penobsquis, Plumsweep, Cassidy Lake, Mill Brook, Lutes Mountain - Wayerton, Penniac and Lincoln

LINE NUMBERS OR LINE SERIES DNR Series

TYPE OF STUDY 24-fold shallow penetration, high resolution reflection (Mini-Sosie); modified soil compactor source

DATA CHARACTERISTICS Digital field tapes, final hard copy (plastic) sections, plus all other data generated by project.

DATA AVAILABILITY All data available from New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division.

REFERENCE(S) Steeves, B. and Kingston, P.W. (1981). Carboniferous Seismic Survey. New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, Open File Report 81-1, 145 p.

NOTES

SURVEY INDEX NO.	**14**	***COMPANY***	Chevron Standard Limited
CONTRACTOR	Western Geophysical Company of America	***DATE OF SURVEY***	September - October, 1980
PURPOSE	Petroleum exploration	***COVERAGE***	807 km shot/792 km processed; 5 sec. Depth
NTS MAP(S)	21 B, 21 G, 21 H	***AREA***	Eastern and western ends of the Bay of Fundy

LINE NUMBERS OR LINE SERIES BF-20, BF-26, BF-31, BF-32, BF-33, BF-51, BF-60, BF-63, BF-66, BF-69, BF-72, BF-78, BF-84, BF-90.

TYPE OF STUDY 36-fold marine reflection: air gun source; 2565m streamer cable

DATA CHARACTERISTICS Recording equipment - Kiloseis LRS-16 Marine Telemetry System. Recording parameters - filter: hi cut 450 Hz low cut 9 Hz; sample rate: 1 msec; format: SEG B 1600 bpi PE for array formed data: LRS 288 channel format for uncompacted data.
Hard (paper) copies of stacked and migrated sections produced.
North Mountain Basalt is the only continuous correlateabe reflection; data quality of some lines is poor.

DATA AVAILABILITY Detailed field and recording parameters and hard (paper) copies of all migrated sections available from the New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division; field data available from Chevron Canada Resources, Calgary, AB.

REFERENCE(S) McCormack, W.J. 1981. Bay of Fundy 1980 report on the geophysical survey conducted by Chevron Standard Limited. 23p. Report available from New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division.

NOTES

SURVEY INDEX NO.	**15**	***COMPANY***	Chevron Standard Limited
CONTRACTOR	Western Geophysical Company	***DATE OF SURVEY***	October, 1980
PURPOSE	Petroleum exploration	***COVERAGE***	1536 km shot and processed
NTS MAP(S)	21 I, 21 P	***AREA***	Northumberland Strait and Gulf of St. Lawrence

LINE NUMBERS OR LINE SERIES C80 Series

TYPE OF STUDY 48-fold marine reflection: air gun source; 2519m streamer

DATA CHARACTERISTICS Recording equipment - Kilosels LRS-16 Marine Telemetry System. Recording parameters - filter: hi cut 450 Hz low cut 9 Hz; sample rate: 1 msec
Data quality is good to very good.

DATA AVAILABILITY Plastic originals of migrated stacked sections of the Gulf of St. Lawrence lines from Canadian Oil and Gas Lands Administration, Halifax; plastic originals of migrated stacked sections of Northumberland Straits lines from Atlantic Geoscience Centre, Dartmouth: COGLA Project # 8624-C4-7E

REFERENCE(S) Durling, P. 1989. Personnel communication; Atlantic Geoscience Centre, Dartmouth, N.S.

NOTES

SURVEY INDEX NO.	**16**	***COMPANY***	Chevron Standard Limited
CONTRACTOR	Western Geophysical Company of America	***DATE OF SURVEY***	August, 1981
PURPOSE	Petroleum exploration	***COVERAGE***	654 km shot and pocessed; 6 sec. Depth
NTS MAP(S)	21 B, 21 G, 21 H	***AREA***	Bay of Fundy

LINE NUMBERS OR LINE SERIES L81-07, L81-10, L81-15, L81-16, L81-18, L81-21, L81-24, L81-29, L81-36, L81-42, L81-47, L81-54, L81-55, L81-65, L81-68, L81-71, L81-79, L81-85, L81-91, L81-97.

TYPE OF STUDY 48-fold marine reflection: air gun source; 2565m streamer

DATA CHARACTERISTICS Recording equipment - Kilosels LRS-16-Marine Telemetry System. Recording parameters - filter: hi cut 450 Hz low cut 9 Hz; sample rate: 1msec (uncompacted), 2 msec (array formed); format: SEG C 6250 bpi GCR.
Migrated sections produced

DATA AVAILABILITY Detailed field and recording parameters and hard (paper) copies of all migrated sections are available from the New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division; field data available from Chevron Canada Resources, Calgary, AB.

REFERENCE(S) McCormack, W.J. 1982. Bay of Fundy 1981 report on the geophysical survey conducted by Chevron Standard Limited. 22p. Report available from New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division.

NOTES Gravity survey conducted concurrently

SURVEY INDEX NO.	**17**	***COMPANY***	Chevron Standard Limited
CONTRACTOR	Western Geophysical Ltd	***DATE OF SURVEY***	May - November, 1981
PURPOSE	Petroleum exploration	***COVERAGE***	706 km; 4 sec. Depth
NTS MAP(S)	21 H, 21 I	***AREA***	Moncton Subbasin

LINE NUMBERS OR LINE SERIES L1, L2Y, L11, L23Y, L25Y, L28Y, L29Y, L31X, LL31X, L34Y, L37Y, L39Y, L41Y, L45Y, L51Y, L53, L55Y, L57Y, L63X, L63Y, L64Y, L65Y, L66Y, L67Y, L69Y, L75X, L77Y, L79Y, L81Y, L83Y, L85Y.

TYPE OF STUDY Vibroseis reflection

DATA CHARACTERISTICS Recording equipment - T. I. Digital Field System V/FTI TIMAP Correlating System.
Recording parameters - filter: hi cut 64 Hz 72 db/octave, low cut 12 Hz 18 db/octave; Sample rate: 4 msec; format: SEG B 1600 bpi.
Final stacks and migrated sections produced from correlated records.

DATA AVAILABILITY Detailed field and recording parameters and hard (paper) copies of all the migrated sections are available from the New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division; field data available from Chevron Canada Resources, Calgary, AB.

REFERENCE(S) Augsten, R.H. 1982. Report on 1981 seismic survey for New Brunswick, 17p. In: Final report on Geophysical Survey conducted by Chevron Standard Limited. Report available from New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division.

NOTES

SURVEY INDEX NO.	**18**	***COMPANY***	Chevron Standard Limited
CONTRACTOR	Western Geophysical Company of America	***DATE OF SURVEY***	1981
PURPOSE	Petroleum exploration	***COVERAGE***	698 km shot and processed
NTS MAP(S)	21 P	***AREA***	Gulf of St. Lawrence

LINE NUMBERS OR LINE SERIES C81 Series

TYPE OF STUDY 48-fold marine reflection: air gun source; 3130.2m streamer cable

DATA CHARACTERISTICS Particulars unavailable; assumed to be similar to other Chevron marine surveys shot in 1980 and 1981. Data quality is good to very good.

DATA AVAILABILITY Plastic originals of migrated stacked sections from Canadian Oil and Gas Lands Administration, Halifax; COGLA Project # 8624-C4-9E

REFERENCE(S) Durling, P. 1989. Personnel communication; Atlantic Geoscience Centre, Dartmouth, N.S.

NOTES

SURVEY INDEX NO.	**19**	***COMPANY***	Chevron Standard Limited
CONTRACTOR	Sefel Geophysical	***DATE OF SURVEY***	June, 1982
PURPOSE	Petroleum exploration	***COVERAGE***	458 km shot and processed; 6 sec depth
NTS MAP(S)	21 G, 21 H	***AREA***	Eastern end of Bay of Fundy

LINE NUMBERS OR LINE SERIES 82-22, 82-25, 82-28, 82-29, 82-31, 82-33, 82-37, 82-37A, 82-48, 82-50, 82-54A, 82-54B, 82-56, 82-60, 82-62A, 82-62B, 82-67, 82-73.

TYPE OF STUDY 48-fold marine reflection: airgun source; 2400m streamer

DATA CHARACTERISTICS Recording equipment - Geosource MDS-10. Recording parameters - filter: hi cut 62.5 Hz 72 db/octave, low cut 7 Hz 18 db/octave; sample rate: 4 msec; format: SEG B 1600 bpi. Final stacks and migrated sections produced from correlated records.

DATA AVAILABILITY Detailed field and recording parameters, hard (paper) copies of all migrated sections are available from the New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division; filed data available from Chevron Canada Resources, Calgary, AB.

REFERENCE(S) Case, R. T. and Bzdel, L.W. 1983. Bay of Fundy 1982 report on the geophysical survey conducted by Chevron Standard Limited. 28p. Report available from New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division.

NOTES Gravity and magnetics survey conducted concurrently

SURVEY INDEX NO.	**20**	***COMPANY***	Chevron Canada Resources Limited
CONTRACTOR	Safel Geophysical	***DATE OF SURVEY***	June - July 1982
PURPOSE	Petroleum exploration	***COVERAGE***	100 km; 6 sec depth
NTS MAP(S)	21 I	***AREA***	Northumberland Strait

LINE NUMBERS OR LINE SERIES C82 Series

TYPE OF STUDY 48-fold marine reflection: air gun source; 2400m streamer

DATA CHARACTERISTICS Recording equipment - Geosource MDS-10.
Recording parameters - filter: high cut 62.5 Hz-72 db/octave, low cut 7 Hz-18 db/octave; Sample rate: 4 msec; format: SEG B 1600 bpi. Migrated sections produced from correlated records.
Data quality is good to very good

DATA AVAILABILITY Detailed field and recording parameters, hard (paper) copies of all migrated sections are available from the New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division; field data available from Chevron Canada Resources, Calgary, AB; COGLA holds plastic originals of all lines (Project # 8624-C4-13E)

REFERENCE(S) Durling , P. 1989. Personal communication. Atlantic Geoscience Centre, Dartmouth, N.S.
Hiebert, B.E. 1983. Report of the geophysical survey conducted by Chevron Canada Resources Limited in the Gulf of St. Lawrence. Report submitted to the New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, 37 p.

NOTES Gravity and magnetics survey conducted concurrently

SURVEY INDEX NO.	**21**	***COMPANY***	Chevron Canada Resources Limited
CONTRACTOR	Western Geophysical Ltd.	***DATE OF SURVEY***	May, 1982 - March, 1983
PURPOSE	Petroleum exploration	***COVERAGE***	741 km
NTS MAP(S)	21 I, 21 H	***AREA***	Moncton Subbasin

LINE NUMBERS OR LINE SERIES L1Y, L2, L3Y, L7, L9, L9A, L9B, L10, LL11, L13, L15X, LL15X, L16, L17X, L18, LL18, L19X, L19Y, L20, L21X, L25X, L29, L30, L35, L49, L51, L54, L56, L58, L58A, L59, L60, L60A, L60Y, L62, L64, L65, L66, L68A, L69, L70, LL70, L70A, L72X, LL72X, L73, L83, L91, LL91, L93, L95, LL95, L97.

TYPE OF STUDY Vibroseis reflection

DATA CHARACTERISTICS Recording equipment - T. I. Digital Field System , V/FTI TIMAP Correlating System. Recording parameters - filter: high cut 64 Hz 72 db/octave, low cut 12 Hz 18 db/octave; sample rate: 4 msec; format: SEG B 1600 bpi. Final stacks and migrated sections produced from correlated records.

DATA AVAILABILITY Detailed field and recording parameters and hard (paper) copies of all the migrated sections are available from the New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division; field data available from Chevron Canada Resources, Calgary, AB.

REFERENCE(S) Feeney, G.M. (1983). Report on 1982 seismic survey for New Brunswick, 17p. In: Final report on geophysical survey conducted by Chevron Canada Resources Limited (Formerly Chevron Standard Limited). Report available from the New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division.

NOTES Supplement to 1982 New Brunswick Geophysical Survey

SURVEY INDEX NO.	**22**	***COMPANY***	Chevron Canada Resources Limited
CONTRACTOR	Western Geophysical Ltd	***DATE OF SURVEY***	September, 1983 - March, 1984
PURPOSE	Petroleum exploration	***COVERAGE***	300.3 km
NTS MAP(S)	21 H, 21 I	***AREA***	Moncton Subbasin

LINE NUMBERS OR LINE SERIES
L2A, L2B, L4, L8, L9XN, L9XS, L16Y, L20, L22, L26, L48, L53X, L54X, L56X, LL57Y, L57YA, L58X, LL59, L60X, L62X, L62Y, L62YA, L64X, L64YR, L65YA, L66A, L66B, L66X, L68B, L70X, L71, L71Y, L75XA, L75Y, L89Y, L93Y, L97Y.

TYPE OF STUDY
Vibroseis reflection

DATA CHARACTERISTICS
Recording equipment - T. I. Digital Field System, V/FTI TIMAP Correlating System. Recording parameters - filter: high cut 90 Hz 72 db/octave, low cut 12 Hz 18 db/octave; sample rate: 4 msec; format: SEG B 1600 bpi. Final stacks and migrated sections produced from correlated records.

DATA AVAILABILITY
Detailed field and recording parameters and hard (paper) copies of the migrated sections are available from the New Brunswick Department of Natural Resourced and Energy, Minerals and Energy Division; field data available from Chevron Canada Resources, Calgary, AB.

REFERENCE(S)
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NOTES

SURVEY INDEX NO.	**23**	***COMPANY***	Chevron Canada Resources Limited
CONTRACTOR	Western Geophysical Ltd	***DATE OF SURVEY***	August - October, 1984
PURPOSE	Petroleum exploration	***COVERAGE***	158.6 km
NTS MAP(S)	21 H, 21 I	***AREA***	Moncton Subbasin: Havelock, Elgin, Hillsborough and Sackville areas.

LINE NUMBERS OR LINE SERIES L2X, L5Y, L6X, L7Y, L9Y, L11Y, L13Y, L19, L23YA, L23YB, L25YA, L25YB, L27Y, LL27Y, LL29Y, L48X, L52Y, L61Y, L63, L66YA, L67YA, LL77Y, LL81Y.

TYPE OF STUDY Vibroseis reflection

DATA CHARACTERISTICS Recording equipment - T. I. Digital Field System V/FTE TIMAP Correlating System. Recording parameters - filter: hi cut 90 Hz 72 db/octave, low cut 12 Hz 18 db/octave; sample rate : 4 msec; format: SEG B 1600 bpi.

DATA AVAILABILITY Detailed field and recording parameters and hard (paper) copies of the migrated sections are available from the New Brunswick Department of Natural Resourced and Energy, Minerals and Energy Division; field data available from Chevron Canada Resources, Calgary, AB.

REFERENCE(S) Morse, D. (1985). Report on 1984 seismic survey for New Brunswick, 11p. In: Final report on geophysical survey conducted by Chevron Canada Resources Limited. Report available from the New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division.

NOTES Gravity survey conducted currently

SURVEY INDEX NO. 24

COMPANY Corridor Resources Inc.

CONTRACTOR Solid State Geophysical

DATE OF SURVEY December 27-31, 1995

PURPOSE Petroleum exploration

COVERAGE 23.1 km; 3 sec.

NTS MAP(S) 21 H/16

AREA Near Sackville, NB

LINE NUMBERS OR LINE SERIES Line locations are confidential.

TYPE OF STUDY 30-fold CMP seismic reflection, 10x10 second sweeps

DATA CHARACTERISTICS Recording equipment: I/0 System 2; Processing by Boyd Petrosearch. Good data quality.

DATA AVAILABILITY Confidential

REFERENCE(S)

NOTES

SURVEY INDEX NO. **25**

COMPANY Corridor Resources Inc.

CONTRACTOR Geophysical Applications Processing Services

DATE OF SURVEY October 19-27, 1998

PURPOSE Petroleum exploration

COVERAGE 12 km; 3 sec.

NTS MAP(S) 21 H/14

AREA The two lines were shot along Cornridge Road and Lewiston Road, near Havelock, NB

LINE NUMBERS OR LINE SERIES Line locations are confidential.

TYPE OF STUDY 30-fold CMP seismic reflection: dynamite source, 60m source point interval, 15m receiver interval (9 Geospace 14-Hz geophones over 15m)

DATA CHARACTERISTICS Recording equipment: Oyo DAS-1 recorders; Processing by Kelman Seismic Processing Inc.

DATA AVAILABILITY Confidential

REFERENCE(S)

NOTES

SURVEY INDEX NO.	**26**	***COMPANY***	Corridor Resources Inc.
CONTRACTOR	Veritas	***DATE OF SURVEY***	August 14-31, 1999
PURPOSE	Petroleum exploration	***COVERAGE***	28.59 km
NTS MAP(S)	21 H/15 & 16	***AREA***	Dorchester to Sackville NB

LINE NUMBERS OR LINE SERIES Line locations are confidential.

TYPE OF STUDY 30-fold CMP seismic reflection: dynamite source, 120m source point interval, 30m receiver interval (6 OYO 30CT 10 Hz)

DATA CHARACTERISTICS Processed by Excalibut-Gemini

DATA AVAILABILITY Confidential

REFERENCE(S)

NOTES

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APPENDIX 1.

OFFSHORE SHALLOW-PENETRATION SEISMIC SURVEYS

The Ocean Mining Division of the Mineral Policy Sector, Energy Mines and Resources Canada, commissioned Earth and Oceans Research Ltd. of Dartmouth, N.S., to identify and index selected samples and seismic data collected in the near-shore of Atlantic Canada. The study area extended from the shoreline out to approximately the 50 m isobath and the acquisition of data was restricted to that outside the mandate of the Bedford Institute of Oceanography. The work completed by Earth and Oceans Research was designed to provide a data base to help plan nonfuel mineral exploration programmes. The surveys listed, their summaries and cited references were excerpted directly from the Earth and Oceans Research (1988) report.

The surveys listed by Earth and Ocean Research and falling within the geographic jurisdiction of this compilation are invariably shallow penetrating. The surveys were undertaken for a variety of reasons, but the primary one was to determine the nature and/or thickness of the unconsolidated sediment and the bedrock profile. Figure 2 identifies the areas in offshore New Brunswick where these surveys were undertaken.

BAY OF FUNDY

1. **Cape Maringouin** (Atlantic Tidal Power Programming Board 1969)

2. **Point Lepreau** (McKay 1974): Closely spaced series of sparker profiles collected for the New Brunswick Electric Power Commission by the Nova Scotia Research Foundation prior to construction of the Point Lepreau Nuclear Power Plant. The study was carried out to investigate the distribution of sediment and bedrock and the bedrock characteristics for water outfall and intake sites.

3. **Point Lepreau** (Stewart 1976): Sidescan sonar, microprofiler, boomer and echosounder data were collected by Geomarine Associates Ltd. in conjunction with the construction of the Point Lepreau Nuclear Power Plant.

4. **Head Harbour Passage and Grand Manan Channel** (Ruffman 1975): High-resolution sparker, ORE Microprofiler and sidescan sonar data collected by Geomarine Associates for the New Brunswick Electric Power Commission. The survey was carried out to examine the seafloor for submarine cable crossings.

5. **Chignecto Bay** (Amos and Asprey 1979)

6. **Cape Spencer** (Cookson *et al.* 1983): Echosounder, sidescan sonar, subbottom profiler and multichannel seismic data over an 8 km X 8 km grid collected by McElhanney Services Ltd. for Chrevron Canada Resources Ltd. A wellsite survey conducted about the Cape Spencer 0-79 well location.

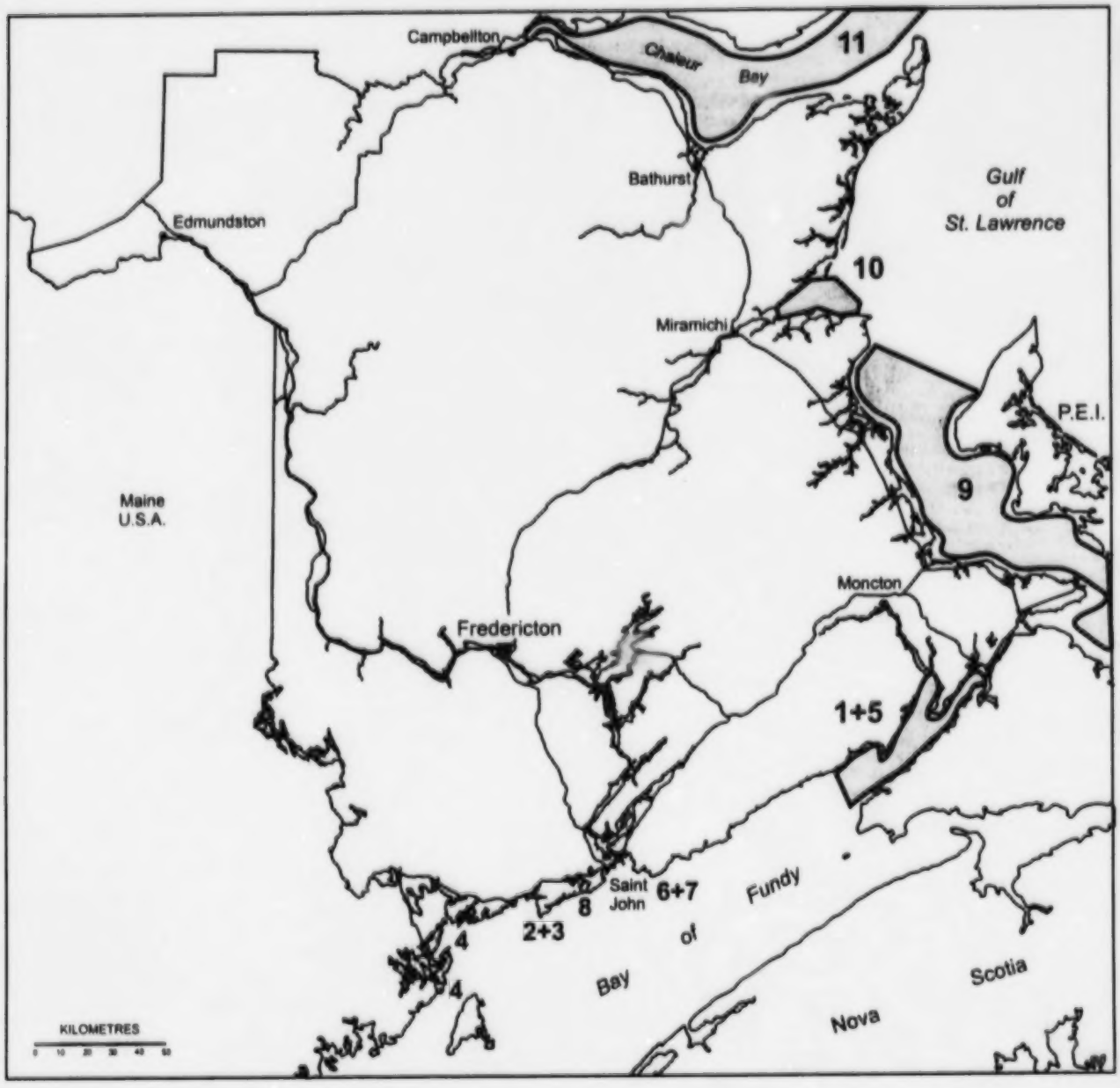

Figure 2. Areas of offshore shallow-penetration seismic surveys.

7. **Cape Spencer** (Seabright Resources Inc. 1983): Geophysical studies were undertaken for Seabright Resources Ltd. by Geosea Services Ltd as part of an offshore placer gold exploration program.

8. **Musquash Harbour** (Thaiassic Data Ltd. 1985): Surface-towed boomer survey completed by Can-Dive Services Ltd. on behalf of Ports Canada. Investigation of the seabed for suitability as a base for wharf construction.

EAST COAST

9. **Northumberland Strait** (Kranck 1967, 1971, 1972): Echosounder and high-resolution sparker data collected by the Atlantic Oceanographic Laboratory.

10. **Miramichi Bay** (Howells and McKay 1977; Philpott 1978): high-resolution sparker and low-frequency echosounder data acquired by the Nova Scotia Research Foundation as part of the Miramichi Channel Study

11. Baie des Chaleurs (Praeg *et al.* 1986; Praeg *et al.* 1987): Airgun, Huntec DTS, Klein sidescan sonar, and echosounder data were collected by the Atlantic Geoscience Centre in 1986 and 1987.

MAPS NOT FILMED

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